

Serial No.: 10/678,690
Amendment dated: September 2, 2005
Reply to Office Action of: May 4, 2005
Atty. Docket No.: JJK-0331 (P2002J100)

REMARKS

The Examiner will note that claims 1, 16, 28, 38, 48, 49 and 56 have been amended to specify that the dewaxing catalyst is bifunctional (metal loaded) and functions by isomerization. Support for this change is found in paragraphs 26 and 29. The oxygenate range is supported in paragraph 33. Applicants also amend a typographical error in the title.

The Examiner's Double-Patenting Rejection

The Examiner provisionally rejected Claims 1- 68 under 35 U.S.C. 101 as claiming the same invention as that of claims 1-68 of co-pending Application No. 10/678,690. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Applicants' Response

Clarification of the rejection is respectfully requested. It appears that there is an inadvertent citation to the 10/678,690 as the co-pending application. Since 10/678,690 is the serial no. of the present application, it cannot form the basis for the double patenting rejection.

The Examiner's Rejection for Anticipation

Claims 1-5, 7, 9-12, 14-18, 20-23, 26-30, 32-34, 36, 37, 48-52, 54-58, 60-63, 66, and 67 were rejected under 35 U.S. C. 102(b) as being anticipated by LaPierre et al. (4,431,519).

The Examiner's Grounds

The Examiner cited LaPierre as disclosing a hydrodewaxing process of a hydrocarbon feed comprising about 0.01 wt. % to about 10 wt.% of an oxygenate such as methanol by

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contacting the feed, which comprises greater than 15 wt. % of wax (e.g., paraffins) and about 0.082 wt. % of sulfur, with a catalyst comprising ZSM-5. The hydrodewaxing process is operated at a temperature of from 650 to 1000° F, at a pressure of from 100 to 3000 psig (689-20,684 kPa), a LHSV of from 0.1 to 10. The catalyst comprises a metal of group 9. LaPierre also discloses that it may be desirable to make the addition of methanol to the oil in an intermittent or pulsing fashion rather than on a continual basis. It is noted that LaPierre does specifically that the process is operated at a hydrogen partial pressure of from 791 to 207886 kPa. However, LaPierre teaches that the hydrogen to hydrocarbon feed mole ratio is between 1 and 20. Therefore, it is estimated that the LaPierre hydrogen partial pressure is within the claimed ranges. (See col. 2, lines 6-36; col. 3, lines 4-31; examples 1-2, Table I)

Applicants' Response

First, it is noted that LaPierre teaches combining the petroleum feed with methanol / ethanol and contacting this mixture with dewaxing catalyst. Applicants' claimed process is the opposite, i.e., the dewaxing catalyst is contacted with oxygenate and the activated catalyst contacted with feed.

Second, the dewaxing catalyst in applicants' claims is contacted with from 100 wppm to 10000 wppm of oxygenate. The amount of methanol in LaPierre is 5 vol. % according to the examples, which is well above the upper limit of oxygenate in applicants' claims.

Third, the methanol/ethanol added to distillate feed of LaPierre reacts exothermally to generate heat for the dewaxing process (col. 1, line 67 to col. 2, line 4, col. 3, lines 4 to 31). Table 2 shows that the 5% methanol results in a 30 °F rise in reactor temperature (670 vs. 700°F). In contrast the much smaller amount of oxygenate in applicants' claimed invention selectively activates the catalyst and has nothing to do with heat generation for the dewaxing process.

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Fourth, the dewaxing catalysts of LaPierre are those which function by cracking or hydrocracking (col. 2, lines 15-17). Applicants' dewaxing catalysts are isomerizing catalysts. Cracking or hydrocracking create light by-products and yield loss as can be seen from Table 2 of LaPierre (amounts of C₁-C₄ created by A vs. B). Table 2 shows an increase in 330 °F+ distillate in going from A to B. The fact that the feed has an IBP of 491° F whereas the product shows increased 300 °F+ fraction indicates considerable cracking of waxy molecules. In contrast, applicants' process uses an isomerizing catalyst. As shown in Table 3 of the specification, the activated catalysts show improvements in both selectivity and 370 °C+ yield.

Fifth, with regard to claim 56, LaPierre is silent as to Fisher Tropsch wax as feed. In fact, LaPierre relates to distillate feeds.

Sixth, claim 48 is directed to water as the oxygenate. LaPierre does not teach or suggest water. This is especially true since his reactant is an organic compound which reacts exothermally.

The Examiner's Rejection

Claims 6, 19, 31, 38-44, 46-47 and 59 were rejected under 35 U.S.C. 103 (a) as being unpatentable over LaPierre et al. (4,431,519) in view of Walker (6,068,757).

The Examiner's Grounds

LaPierre does not disclose that the molecular sieve is ZSM-48 and does not disclose a step of hydrotreating the feed.

Walker discloses a hydrodewaxing process by using a ZSM-48 catalyst. Walker also discloses that the feedstock has been hydrotreated to remove sulfur compounds and nitrogen. (See col. 3, lines 16-19; claims 1 and 6)

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of LaPierre by using a ZSM-48 as taught by Walker because Walker teaches that ZSM-48 has an equivalent function as ZSM-5 in a hydrodewaxing process.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of LaPierre by preliminary treating the feed before hydrodewaxing as taught by Walker because such treating step would improve the product and prolong the activities of the dewaxing catalyst.

Applicants' Response

The Examiner cited Walker as disclosing ZSM-48 as a dewaxing catalyst and a feed pretreatment by hydrotreatment. Claims 6, 19, 31, and 46-47 are dependent claims and the independent claims on which they depend are amended and distinguishable over LaPierre for the reasons noted above. Thus even assuming arguendo that Walker teaches ZSM-48, these dependent claims are patentable over LaPierre. Claim 59 depends on claim 56 and amended claim 56 having a F-T wax feed is distinguished over LaPierre for the reasons above.

Applicants' claims 38 - 44 have a hydrotreating step preceding dewaxing. Assuming that Walker teaches a preliminary hydrotreating step, amended claim 38 is patentable over LaPierre for the reasons noted above.

The Examiner's Rejection

Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over references as applied to claim 28 above, and further in view of Walker (6,068,757).

The Examiner's Grounds

LaPierre does not specifically disclose the catalyst is sulfided.

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Ward discloses a dewaxing process wherein the catalyst is sulfided before use.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of LaPierre by sulfiding the catalyst before using as taught by Ward because sulfiding the catalyst would prolong the activities of the catalyst when using a feedstock comprising sulfur compounds.

Applicants' Response

The rejection of claim 45 refers to Walker whereas the grounds refer to Ward. If one focuses on the issue of sulfiding, claim 45 is dependent on claim 28 and claim 28 was rejected over LaPierre. Claim 45 is therefore patentable even though catalyst sulfiding is known for the reasons stated above for LaPierre.

The Examiner's Rejection

Claims 13, 25, 53 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over LaPierre et al. (4,431,519) in view of either Ward (5,447,623) or Carroll et al. (6,517,704).

The Examiner's Grounds

LaPierre does not specifically disclose the catalyst is sulfided.

Ward discloses a dewaxing process wherein the catalyst is sulfided before use.
(See Ward col. 7, lines 48-54; col. 10, lines 59-61)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of LaPierre by sulfiding the catalyst before using as taught by Ward because sulfiding the catalyst would prolong the activities of the catalyst when using a feedstock comprising sulfur compounds.

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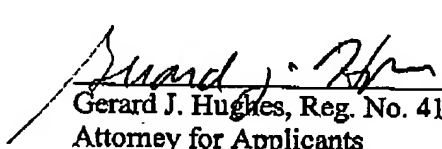
Applicants' Response

Claims 13, 25 and 53 are dependent on claims 1, 16 and 49. Even if it is known that dewaxing catalysts can be sulfided, these dependent claims are patentable over LaPierre for the reasons stated above. Claim 65 depends on claims 56, which as noted above, used a F-T wax as feed. This claim is patentable over LaPierre for the reasons noted above. Hence dependent claim 65 is patentable.

It is urged that applicants have made a patentable advance in the art. Favorable action is solicited.

Respectfully submitted:

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